Joint Fires Coordination Measures

Joint Test and Evaluation

Rock Drill-1 After-Action Report

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1.0 RD-1 Overview

The Joint Fires Coordination Measures (JFCM) Joint Test and Evaluation (JT&E) will develop, test, and evaluate new joint tactics, techniques, and procedures (JTTP) that are designed to standardize kill box (KB) processes to more fully integrate functional and Service component fires between the operational and tactical levels. Additionally, JFCM will evaluate available command, control, communications, and computers (C4) systems that facilitate the flow of KB-related command and control (C2) information between functional and Service components, and determine the best procedures using those existing systems for KB planning and implementation.

The JFCM JT&E is under the auspices of the Office of the Secretary of Defense (OSD), Director, Operational Test and Evaluation (DOT&E). The U.S. Air Force is the designated lead Service and executive agent for the JFCM JT&E. The U.S. Army, Navy, and Marine Corps, and the Unified Commands are designated as participating Services/Commands.

2.0 Rock Drill-1 (RD-1) Charter

JFCM is crafted to develop, test, and evaluate new JTTP that standardize KB fire support coordinating measures (FSCMs) and associated C4 systems to more fully integrate functional and Service component fires. Accordingly, JFCM will develop KB JTTP sequentially, adding detail and definition to the JTTP with each phase of development. The JFCM will use the four-phased approach outlined in the JFCM Program Test Plan. This approach is comprised of two rock drill events, two mini-tests, a risk reduction event, and a field test.

Phase I consists of two rock drill events that will employ a series of tabletop exercises to plan and implement a KB. The purpose of Rock Drill-1 was to capture current methodology utilized to plan and implement KBs as well as establish the means by which JFCM will capture data. RD-1 used a series of tabletop exercises to: (1) determine the current C2 structure used to plan and implement a KB; (2) capture the process by which this C2 structure implements a KB; and (3) establish all of the C4 necessary for this process to take place. RD-1 established data collection processes that will be used to achieve JFCM's ultimate goal of developing a JTTP for KB implementation. Rock Drill deliverables are operational and systems view architecture diagrams. JFCM will identify the sequence of tasks and supporting C4I systems to be integrated into the initial JTTP.

2.1 RD-1 Objectives

The Phase I objective is to study the concepts for planning and implementing KBs by defining the processes that must be performed by the operational and tactical level C2 nodes. The RD-1 objective was to: (1) determine the current C2 structure used to plan and implement a KB; (2) capture the process by which this C2 structure implements a KB; and (3) establish all of the C4 necessary for this process to take place.

To accomplish the RD-1 objective, 31 warfighters from the C2 nodes participated in a series of tabletop exercises. Using increasingly complex scenarios, warfighters were given a request for a fire mission that required them to plan and implement a KB. The subject matter experts (SMEs) simulated the processes required to plan and implement a KB by specifying the sequence of tasks that they would take and identified their interaction with other C2 nodes. The initial operational

view and initial systems view architecture diagrams generated from RD-1 will be validated and refined during RD-2.

2.2 RD-1 Venue and Scenarios

RD-1 was conducted in the auditorium at the Nellis Threat Training Facility (TTF) on August 1 through 5, 2005. The primary component commander staff representatives; Joint Forces Air Component Commander (JFACC), Joint Forces Land Component Commander (JFLCC), Joint Forces Maritime Component Commander (JFMCC) were assigned a position at the table in the front of the room and the subordinate nodes were assigned seating behind them. Each participant was assigned a role commensurate within their component's position in the C2 of KB implementation.

2.3. RD-1 Facilitator

The JFCM exercise facilitator provided a background description and introduced a scenario to initiate the exercise. Each participant in the chain stated what their action would be when their organization receives a tasking or an informational notice, the facilitator obtained agreement on the action from the group, while a member of the JFCM team recorded the action on the overhead projector acetate and another team member recorded it in the Access® database. The components met separately at the end of each exercise to discuss their roles and interactions during the exercise. The entire group performed an exercise reconstruction after the component meetings were concluded.

2.3 RD-1 Participants

Table 1 lists the components that participated in RD-1.

Figure 1. RD-1 Participants
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	Service	Duty Position	Unit Level	Recommended Unit
1	ARMY	OFED Chief	CORPS	III CORPS
2	USAF	ASOG CC	CORPS	III CORPS
3	ARMY	DECOORD	CORPS	III CORPS
4	ARMY	FSE Chief	CORPS	III CORPS
5	ARMY	DFSCOORD	CORPS	III CORPS
6	ARMY	A2C2 Officer	CORPS	III CORPS
7	ARMY	AECOORD	CORPS	III CORPS
8	ARMY	ADE Representative	CORPS	III CORPS
9	ARMY	FAIO	CORPS	III CORPS
10	ARMY	ECOORD	DIV	
11	ARMY	Effects Officer	DIV	
12	USAF	ASOS CC	DIV	
13	ARMY	BCD Ops Chief	CAOC	19th BCD
14	ARMY	BCD Plans Chief	CAOC	19th BCD
15	USMC	Current Fires Officer	MEF	I MEF
16	USMC	TACC-Current Ops Officer	MEF/MEB	2d/3d MAW

Figure 1. RD-1 Participants
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	Service	Duty Position	Unit Level	Recommended Unit
17	USMC	DASC-Senior Air Director	MEF/MEB	MAWTS-1
18	USMC	FSCC-Fire Support Coordinator	MEF/MEB	11th Marines
19	USMC	Air Liaison Officer	MEF/MEB	7th Marines
20	USMC	COC Division Liaison Officer	MEF	1st Marine Div
21	USMC	MAGTF Fires Officer	MEU	EWTGPAC
22	USMC	Air Support Coordinator	TACRON	TACRON
23	USN	Supporting Arms Coordinator	PHIBRON	PHIBRON 2/3
24	USN	Target Intelligence Officer	PHIBRON	NSAWC
25	USN	MOC TST Watch Captain	CARGRU	2d/3d FLEET
26	USN	NR JFACC	RESERVE	2d/3d FLEET
27	USN	E-2 CIC Officer	CAG	2d/3d FLEET
28	USAF	Chief, Combat Operations	CAOC-Ops	
29	USAF	Senior Offensive Duty Officer	CAOC-Ops	608COS
30	USAF	TST Cell Chief / Attack Coord	CAOC-Ops	
31	USAF	Airspace Manager	CAOC-Ops	
32	USAF	C2 Duty Officer	CAOC-Ops	701COS
33	USAF	MAAP Chief	CAOC-Plans	
34	USAF	Airspace Plans	CAOC-Plans	
35	USAF	AWACS Senior Director	ACW	552ACW
36	USAF	JSTARS Senior Director	ACW	
37	ARMY	JSOTF JFE Director	JSOTF	
38	ARMY	SOLE – Fires	JFSOCC	

3.0 RD-1 Data Collection

3.1. Background

The database information from RD-1 will be utilized as the foundation for RD-2. Similarly, the database information from Phase I will be utilized as the foundation for Mini-Test-1. Therefore, it is imperative that the information included in the RD-1 initial database be as complete as possible to ensure testing rigor is achieved for JFCM follow-on tests. The database program itself will be modified to enhance its data collection capabilities for RD-2 to include the capture of whether a C2 node action is internal or external and informal or formal.

3.2. Data Collection Process

3.2.1. Multi-Phased Data Collection Plan

A multi-phased data collection plan was designed for RD-1. The elements included a customized Access® database, two video cameras (a primary and a secondary position), data collection and operational observers, overview diagrams, and participant demographic surveys.

3.2.2. Access Database

JFCM created an Access® database to capture and document the steps through which a KB is established. The database captured information in a step-by-step process utilizing a data

collection form to create a record. Inputs included: the requesting C2 node, the action(s) taken, the receiving C2 node(s) and the command, control, communications, computers, and intelligence (C4I) system(s) used. During RD-1, three exercises were completed and a fourth was nearly completed. Exercise 1 focused on the JFLCC coordinating an immediate purple KB (PKB) outside of his Area of Operations (AO) and was US Army (USA) centric. Exercise 2 focused on the JFLCC coordinating a planned PKB outside of his AO and was US Marine Corps (USMC) centric. Exercise 3 focused on the Joint Force Special Operations Component Commander (JFSOCC) coordinating a planned blue KB (BKB) inside his AO. Exercise 4 focused on the JFMCC coordinating a planned BKB outside of his AO. A total of 60 C2-record events were captured from all four exercises with the following breakdown: Ex1 = 25, Ex2 = 14, Ex3 = 9 and Ex4 = 11. Dr. Devere Henderson, FFRDC, reviewed and commented on the JFCM data collection plan.

3.2.3 Operational View Administrator

The Operational View Administrator (OVA) progressively recorded each C2 node on acetate sheet using an overhead projector. As each exercise unfolded, the OVA drew a rough operational view that was projected for display to the SMEs. In this way, the initial operational view was verified by the SMEs as it was recorded. This process proved very helpful in constructing the event sequence diagram and will continue to be utilized in RD-2.

3.2.4. Video Capture

The video capture process provided a more complete picture of the exercises. The data team has found this video very helpful in reviewing the dynamic interaction between participant SMEs. The approximately 20 hours of videotape was first transferred from analog tape to a digital video disk (DVD) and subsequently transcribed manually into Microsoft Word® documents. The transcripts provided clarification and supplemental information on the KB implementation process and the video process will be utilized again for RD-2.

3.2.5. Operational and Data Observers

Observers provided the final data capture method. Four operational observers interacted with participants in the audience and gathered important information, mainly from side-bar conversations. Additionally, four data observers took detailed notes on both the data capture methodology and the KB implementation process. This process was helpful in providing additional clarification in the KB coordination as well as identifying participant names. Observers will be utilized in RD-2 as well.

3.2.6. Facilitators – Data Collection Enablers

JFCM facilitators closely controlled each exercise. The facilitator proved vital in the data capture process. The Access® database was designed with specific data fields to be populated. A reply format was designed by the data team in order to facilitate the population of these fields. A primary function of the facilitator was to “police” this reply format as the data-form was populated. The facilitator faced a significant challenge holding the participants to this format. Ensuring participants provided data in a specific format was anticipated and proven to be true as one of the “long poles” in the data capture process. A more robust participant rules of engagement (ROE) will hopefully mitigate this issue in RD-2. Additionally, RD-1 identified a potential danger of entering biased data when a facilitator would “correct” or “lead” a participant

SME. A more detailed data entry ROE will help guard against this danger. Lastly, RD-1 showed that the facilitator duties could have been assisted by a greater knowledge of joint and Service doctrine by JFCM SMEs. RD-1 also showed that a more vigorous scenario is required to moderate the "whys" of KB coordination.

RD-1 showed that the use of background scenarios was required to provide the participant SMEs a realistic backdrop of information with which to conduct an exercise. Unfortunately, a lack of an in-depth scenario and requisites directive orders generated many of the previously identified "whys" that clouded the KB implementation process. This information will be provided in much greater detail for RD-2. While it can be surmised that some level of "why" will still exist at this point in the institution of a new JFCM, a more robust scenario with documentation for RD-2 should increase data capture efficiency.

3.3 Data Collection Conclusion

As of the publication of this AAR, analysis of RD-1 data continues. Data analysts will team up with operations SMEs to coordinate the best design of the scenario and exercises in order to better focus the data capture process. Additionally, these data/operations meetings will draft the initial KB JTTP. This draft JTTP will be tested in RD-2.

4.0 RD-1 Observations and Findings

4.1 Lessons Observed

- ***"Kill Box" Definition.*** RD-1 revealed the fact that the term "Kill Box" has many definitions among warfighters. In order to facilitate a clear and concise JTTP, JFCM is educating participants on the Air Land Sea Applications (ALSA) Multi-Service Tactics, Techniques, and Procedures (MTTP) definition.

- ***ALSA MTTP.*** The ALSA KB MTTP was not widely read prior to the start of the test event. The MTTP was just published the month prior to RD-1. In addition, the ALSA KB MTTP has ambiguities.

- ***KB Attributes.*** During 3.5 exercises the preponderance of discussion focused on air component C2 processes.

- ***RD-1Focus.*** Much effort and time was expended to explain "why" a KB was being established in the first place. SMEs had to be convinced to change their mindsets to accept that a KB is the FSCM of choice for that scenario and press on with identifying processes and C4I systems. However, the warfighter mental road block can not be overlooked or underestimated.

  JFCM must provide a better "why" in order for the SMEs to provide a better how. The JFCM team must have a better understanding of exactly what a KB is in order to develop a better "why."

  The lack of vision between surface-to-surface oriented SMEs and air-to-surface SMEs to integrate and synchronize joint fires as opposed to deconflicting joint fires is the root cause understanding "why" a KB should be used.

The surface-to-surface SME has difficulty conceiving an FSCM that incorporates air and space power. Long standing doctrine and practice make it difficult to envision the usefulness of an FSCM that seems to already exist. USA SMEs tended to see surface-to-surface and air-to-surface as two totally different fires.

- ***C2 Nodes.*** The C2 nodes identified in RD-1 required in order to implement and execute surface-to-surface fires are well understood and have a long history, as do air-to-surface fires. C2 node structure is not optimized to plan and execute a KB FSCM. Few have experience coordinating joint operations other than CAS.

- ***KB Symbology.*** C2 nodes could coordinate and communicate with one another via secure voice and electronic chat. The COP does not immediately transfer between C4I systems; AFATDS/ADOCS/TBMCS. Symbology for a KB does not exist

5.0 RD-1 Summary

Although the concept of a KB as an FSCM was new to most of the SMEs, they were able to work through who communicates with whom using what C4I systems. The lack of understanding of the purpose of a KB led to confusion as to which C2 nodes should work with other C2 nodes. Ultimately, major C2 nodes were identified as: (1) Tactical Operations Center (TOC)/Combat Operations Center (COC)/Supporting Arms Coordination Center; (2) Air Operations Center, airspace planners/coordinators and the USA Battlefield Coordination Detachment

RD-1 showed that in order to provide better assistance to the participants with the exercise process, the JFCM SMEs need to research and understand the joint publications relevant to FSCMs. Equally important, the SMEs must know the Service publications relevant to FSCMs within their field of expertise. Annex A is a list of publications that the corresponding SME must read. This list is a draft and is not all inclusive. Further research by each SME is required to ensure that all relevant publications are read.

RD-1 is complete. RD-1 was the first in a series of events to develop KB JTTP, the first fire support coordinating measure created in over 10 years. While there is still much to do, RD-1 brought together subject matter experts from all Services to standardize *Kill Box* JTTP. RD-1 uncovered misunderstandings, duplications of effort, holes in the processes, and cleared a path for clear, concise, and standardized JTTP. RD-1 answered many questions, but discovered many more. In addition, RD-1 steered the Killboxers toward a better data collection process for RD-2, JFCM's next event scheduled for October 2005. Initial KB JTTP, forged from the fires of RD-1, will soon be tempered in RD-2.

ANNEX A RECOMMENDED READING LIST

Joint Publications

JP 0-2, Unified Action Armed Forces (UNAAF).

JP 1-02, DOD Dictionary of Military and Associated Terms.

JP 2-0, Doctrine for Intelligence Support to Joint Operations.

JP 2-01.1, Joint Tactics, Techniques, and Procedures for Intelligence Support to Targeting.

JP 2-01.3, Joint Tactics, Techniques, and Procedures for Joint Intelligence Preparation of the Battlespace.

JP 3-0, Doctrine for Joint Operations.

JP 3-01, Joint Doctrine for Countering Air and Missile Threats.

JP 3-02, Joint Doctrine for Amphibious Operations.

JP 3-03, Doctrine for Joint Interdiction Operations.

JP 3-05, Doctrine for Joint Special Operations.

JP 3-09, Doctrine for Joint Fire Support.

JP 3-09.3, Joint Tactics, Techniques, and Procedures for Close Air Support.

JP 3-18, Joint Doctrine for Forcible Entry Operations.

JP 3-30, Command and Control for Joint Air Operations.

JP 3-50.2, Doctrine for Joint Combat Search and Rescue.

JP 3-52, Joint Doctrine for Airspace Control in a Combat Zone.

JP 3-60, Joint Doctrine for Targeting.

JP 5-00.2, Joint Task Force Planning Guidance and Procedures.

Multiservice

FM 3-31/MCWP 3-40.7, Joint Force Land Component Commander Handbook.

FMFM 2-7/MCWP 3-43.3, Fire Support in Marine Air-Ground Task Force Operations.

Navy and Marine Corps, Naval Operating Concept (NOC) for Joint Operations.

NTTP 3-02.2/MCWP 3-31.6, Supporting Arms Coordination in Amphibious Operations.

NTTP 3-03.4, Naval Strike and Air Warfare.

NTTP 3-09.2/MCRP 3-16.6, JFIRE, Multiservice Procedures for the Joint Application of Firepower.

NWP 3-09.11M/FMFM 1-7, Supporting Arms in Amphibious Operations.

NWP 3-20.32, Surface Ship Gunnery.

NWP 3-56, Composite Warfare Commander's Manual.

NWP 3-56.1, Naval Air Operations Center Organization and Processes.

Marine Corps

MCDP 1, Warfighting.

MCDP 3, Expeditionary Operations.

MCWP 3-16, Fire Support Coordination in the Ground Combat Element.

MCWP 3-23, Offensive Air Support.

MCWP 3-23.2, Deep Air Support.

Other

ATP-4, Allied Naval Gunfire Support, (NATO-specific).

CJCS Guide 3122, Time-Phased Force and Deployment Data (TPFDD) Primer.

CJCSI 3121.01 series, Standing Rules of Engagement for US Forces.

CJCSM 3122.01, Joint Operation Planning and Execution System (JOPES), Volume 1, (Planning Policies and Procedures).

CJCSM 6120.05, Manual for Tactical Command and Control Planning Guidance for Joint Operations:

Joint Interface Operational Procedures for Message Text Formats.

Joint Technical Coordinating Group for Munitions Effectiveness (JTCG/ME), Joint Munitions Effectiveness Manual(s).